

CHAPTER 1

Biology: Exploring Life

Chapter Objectives

Opening Essay

Explain why Madagascar has so many species of lemurs.

Themes in the Study of Biology

- 1.1 Describe seven properties common to all life.
- 1.2 Describe the levels of biological organization from molecules to the biosphere, noting the interrelationships between levels.
- 1.2 Define the concept of emergent properties and describe an example of it.
- 1.3 Explain why cells are a special level in biological organization. Compare prokaryotic and eukaryotic cells.
- 1.4 Compare the dynamics of nutrients and energy in an ecosystem.

Evolution, the Core Theme of Biology

- 1.5 Explain how DNA encodes a cell's information.
- 1.6 Compare the three domains of life. Distinguish between the three multicellular kingdoms within Eukarya.
- 1.7 Describe the process and products of natural selection. Explain why individuals cannot evolve.

The Process of Science

- 1.8 Distinguish between quantitative and qualitative data. Compare the definitions and use of inductive and deductive reasoning in scientific investigations.
- 1.8 Distinguish between a scientific theory and a hypothesis.
- 1.8 Distinguish between the scientific definition and common use of the word *theory*.
- 1.9 Describe the structure of a controlled experiment and give an example.

Biology and Everyday Life

- 1.10 Compare the goals of science and technology. Explain why an understanding of science is essential to our lives.
- 1.11 Explain how evolution impacts the lives of all humans.